The Role of Technology in Climate Change Mitigation and Other Environmental Issues

John A. "Skip" Laitner
(202-233-9833; Fax: 202-233-9589; E-mail: laitner.skip@epamail.epa.gov)
Economist
EPA Office of Atmospheric Programs
501 3rd Street, NW
4th Floor, MS-6201J
Washington, D.C. 20001

Abstract

President Clinton has said that global climate change is a serious issue that should be taken seriously. The good news, however, is that addressing the challenge of climate change is not about ratcheting down our economy. Rather, it is about investing in new technologies and using America's technological leadership to develop new ways to make things and new ways to get where we want to go, where we want to work, and where we want to play. Creating the opportunity to put technology more actively into a climate strategy involves two critical approaches: (1) accelerating the investment in widely available but underutilized technologies, and (2) developing both the near-term and the new technologies that can help us meet the twin challenges of moderating climate change and, at the same time, strengthening the U.S. economy.

Combined heat and power (CHP) systems offer an important opportunity to demonstrate a "smart path" toward mitigating global climate change. The accelerated adoption of the existing generation of CHP systems has the potential to reduce carbon emissions by perhaps 30 million metric tons by 2010. This is an important down payment on meeting the larger commitment of carbon reduction. Moreover, by emphasizing a deployment path that accelerates the deployment of existing systems — largely by addressing a series of regulatory and market barriers that impede their adoption — we can strengthen the market potential for the next generation of CHP systems that is the focus of DOE's Advanced Turbine Systems Program.

The Role of Technology in Climate Change and Other Environmental Policies

John A. “Skip” Laitner
Environmental Protection Agency
Office Of Atmospheric Programs

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Most scientists agree that if we don't reduce the level greenhouse gas emissions, we will seriously disrupt the global climate

Scientists don't yet know what the precise consequences of global climate change will be. But we do know that the process must be slowed, then stopped, then reduced if we want to continue our economic progress and preserve the quality of life in the United States and throughout our planet. We know what we have to do.

Greenhouse gas emissions are caused mostly by the inefficient burning of coal or oil for energy. The conversion of fossil fuel to energy use could be made much cleaner with existing technologies or those already on the horizon, in ways that will not weaken the economy but in fact will add to our strength in new businesses and new jobs. If we do this properly, we will not jeopardize our prosperity; we will increase it.

President Bill Clinton
October 26, 1997

Federal Efficiency Programs Currently Serve Many Purposes

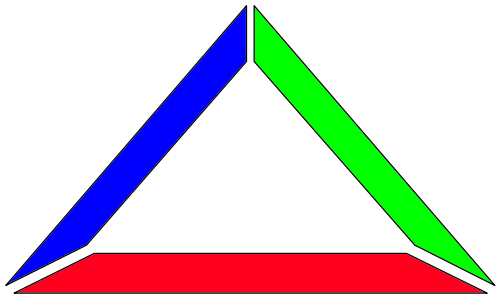
- Reducing Local Criteria Air Pollution
- Lowering Greenhouse Gas Emissions
- Reducing the Cost of Doing Business
- Saving Consumers Money
- Expanding the Markets for Manufacturers of Advanced Technologies

The Good News About Climate Change Policy

- It is not about ratcheting down our economy;
- Rather, it is about:
  - investing in new technologies;
  - using America's technological leadership; and
  - developing new ways to make things, and new ways to get where we want to go, where we want to work, and where we want to play.

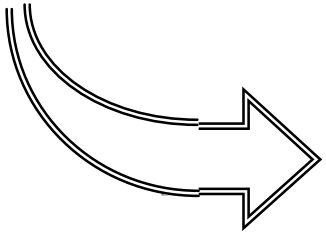
The Cornerstone of a Market-Based Climate Policy

US targets and timetables



Catalyze productivity improvements

Support progress by developing countries

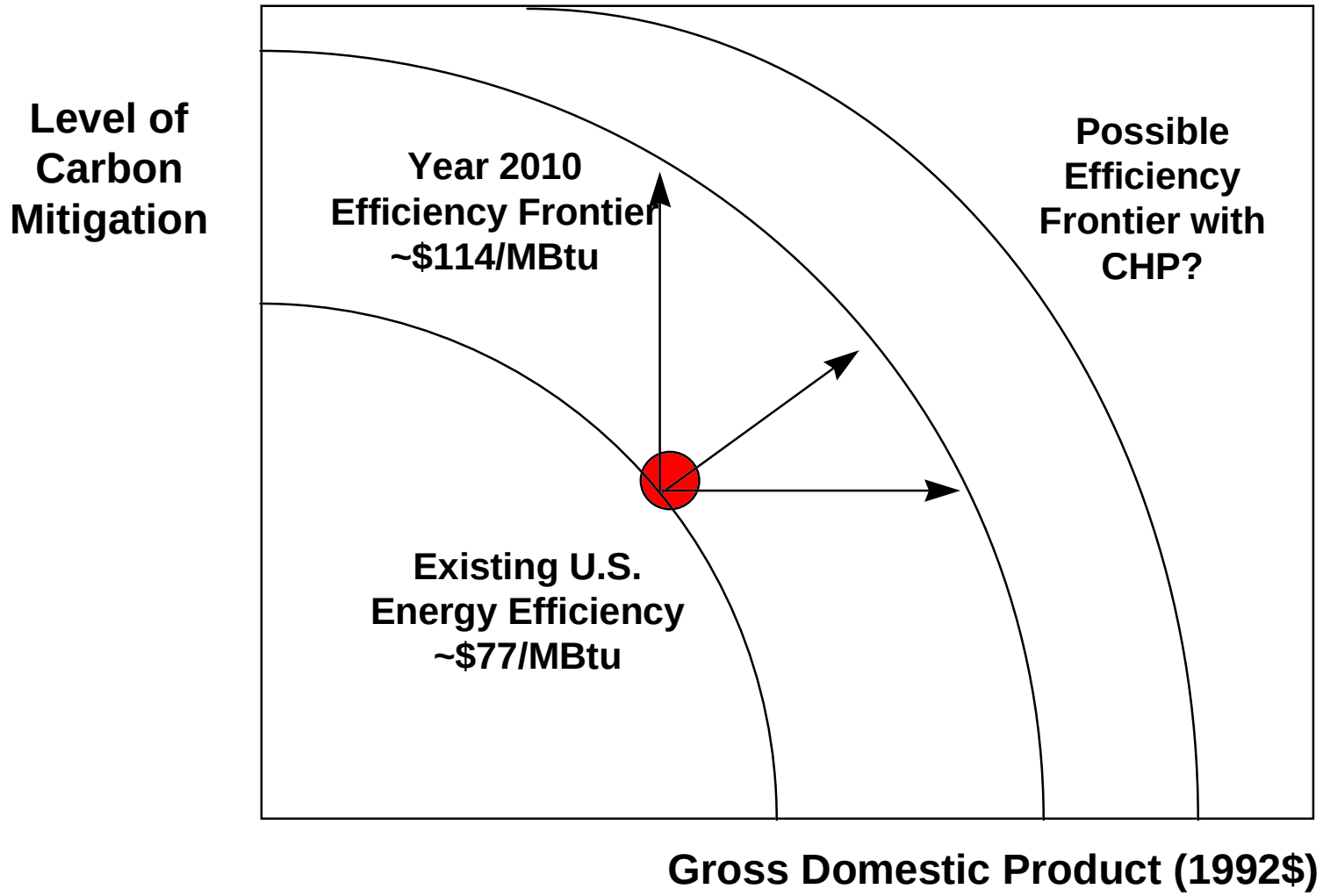


- Decouple economy from carbon through energy efficiency and low carbon technologies
- CCAP provides 25% of 1990 Carbon levels by 2010
- Green Lights: net savings of over $1500/ton carbon
- Critical Need for Industrial Initiatives

The USG Perspective

- Energy efficiency investments are being increasingly recognized as they can contribute to:
  - Environmental protection
  - Cost savings
  - Economic growth
- Energy efficiency technologies are important to air quality, important to Climate Change, and important to increased economic productivity and performance

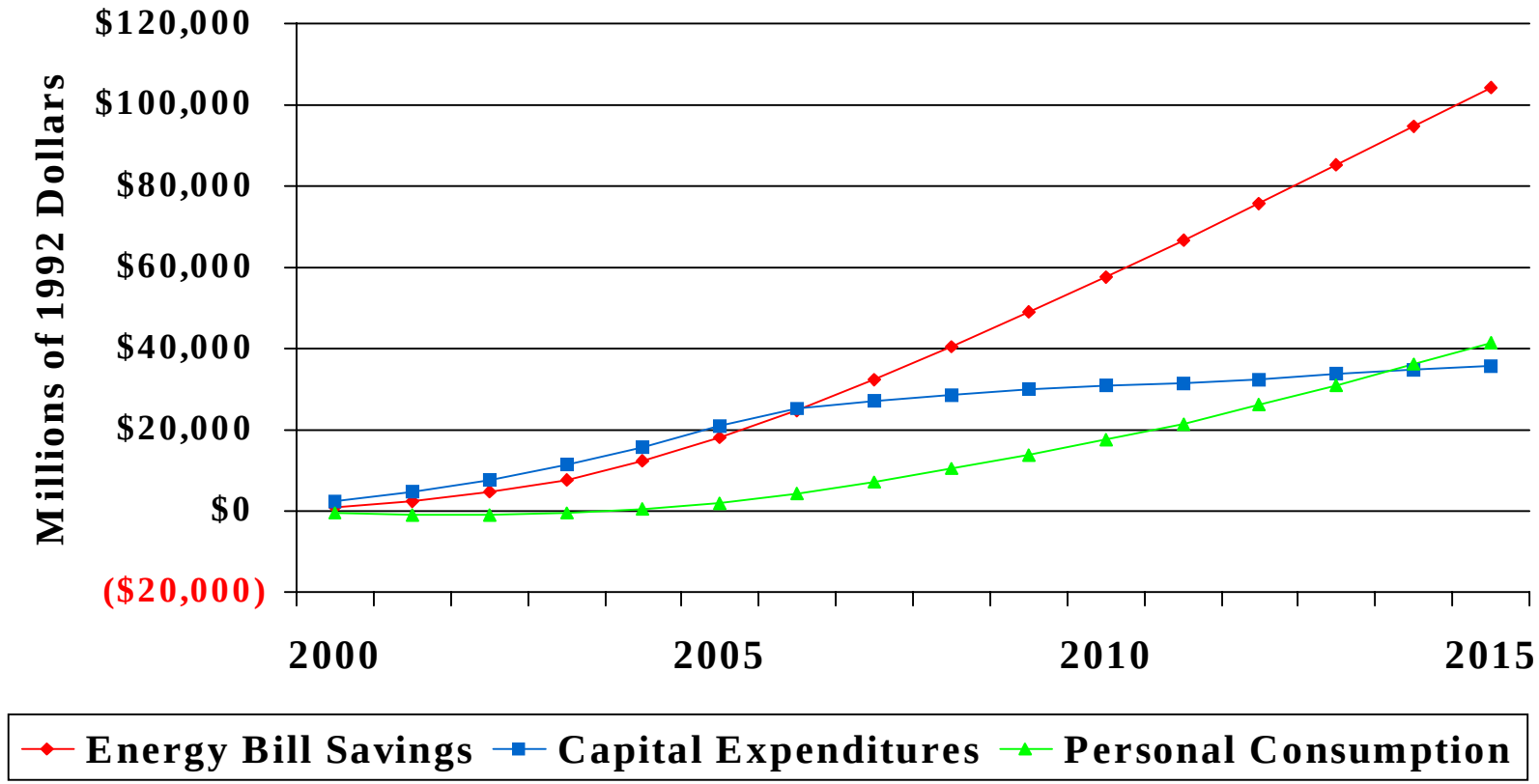
Tapping the Opportunity for Climate Change Actions by Reducing Energy Inefficiencies in the United States



Impact of Climate Policy Using Argonne's AMIGA Model

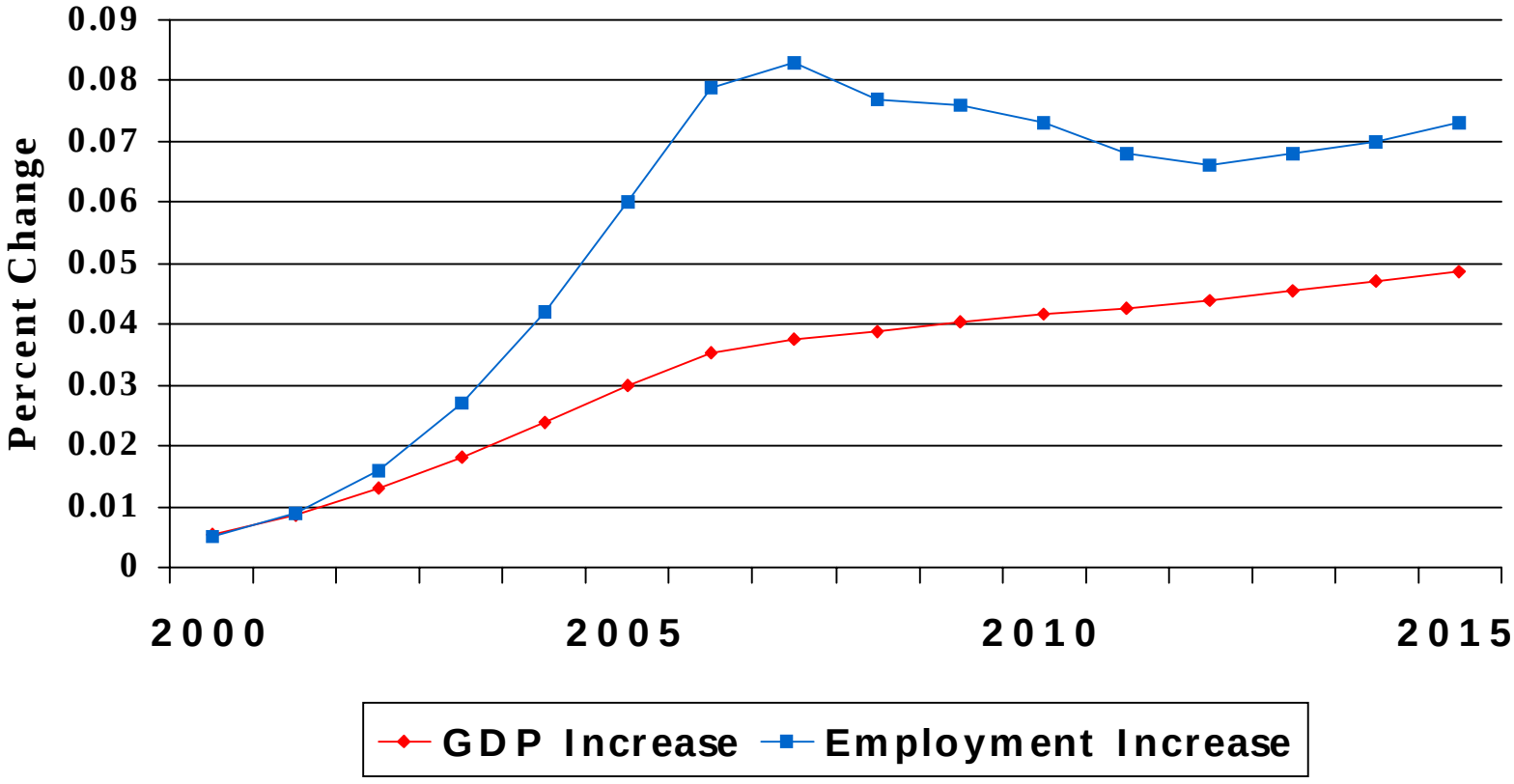
- Generally following the trends in DOE's Five-Lab Study
- $55 per metric ton for marginal cost of carbon (in 1996$)
- Recycling revenue to lower payroll taxes
- Accelerated R&D in energy efficiency technologies
- Government purchase of high efficiency technologies
- Behavioral change in adoption rates

Economic Impacts from Stabilizing Carbon Emissions to 1990 Levels



Source: AMIGA Model Analysis done for EPA/OAP

Economic Impacts from Stabilizing Carbon Emissions to 1990 Levels

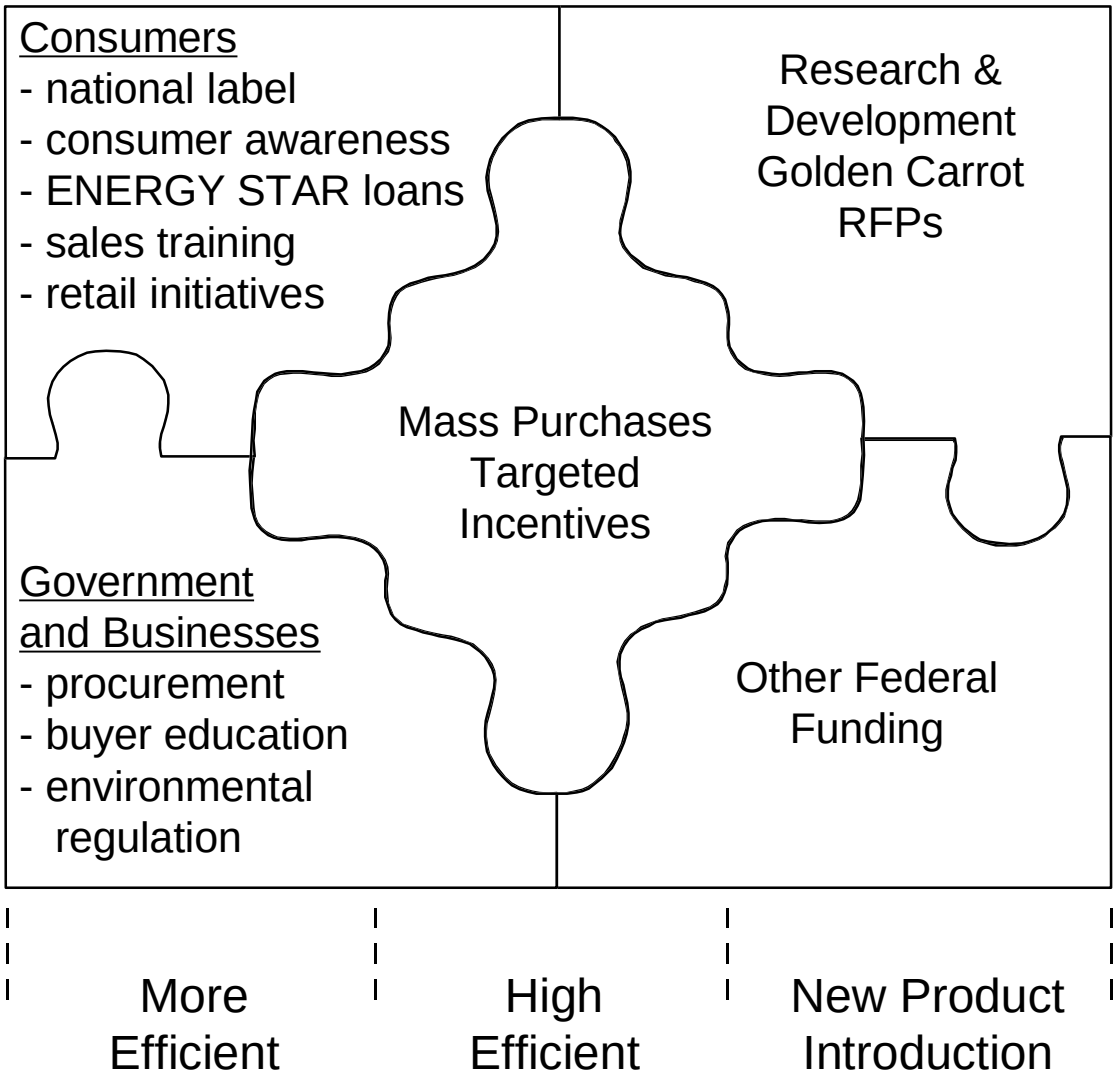


Source: AMIGA Model Analysis done for EPA/OAP

Combined Heat and Power Systems

- Offer an important opportunity to demonstrate a “smart path” toward mitigating global climate change
- The accelerated adoption of the existing generation of CHP systems has the potential to reduce carbon emissions by perhaps 35-40 MMT by 2010
- Just as important, CHP can also reduce NOx emissions by 300,000 tons by 2010

The Many Pieces in a Technology Puzzle



EPA's Primary Strategy

- Increase the penetration of existing energy-efficient technologies through product labeling, streamlined permitting, and other partnership efforts
- Invest in, support, and coordinate with other market transformation initiatives that will complement our efforts, and further stimulate introduction of new and more efficient products

The difficulty lies not with the new ideas, but in escaping the old ones

John Maynard Keynes